

WHAT IS CLAIMED IS:

1. A catalyst composition comprising:

a) an oxygen compound of an element selected from Group IVB or Group IVA of the Periodic Table of the Elements;

5        b) an oxygen compound of an element selected from Group VIB or Group VIA of the Periodic Table of the Elements; and

c) at least about 1% by weight based upon total catalyst weight of fumed silica particles.

10        2. The catalyst composition of claim 1 wherein the fumed silica comprises at least about 5% by weight of the total catalyst weight.

15        3. The catalyst composition of claim 1 further including an aluminum compound.

4. The catalyst composition of claim 3 wherein the aluminum compound is aluminum oxide.

20        5. The catalyst composition of claim 1 further including a Group VIII metal.

6. The catalyst composition of claim 5 wherein the Group VIII metal is selected from platinum and palladium.

7. The catalyst composition of claim 1 wherein the Group IVB element is tin.

8. The catalyst composition of claim 1 wherein the Group IVA element is selected from the group consisting of titanium and zirconium.

9. The catalyst composition of claim 1 wherein the VIB element is molybdenum or tungsten.

10. The catalyst composition of claim 1 comprising tungsten oxide and zirconium oxide.

11. The catalyst composition of claim 1 comprising molybdenum oxide and zirconium oxide.

12. The catalyst composition of claim 1 comprising a sulfate and zirconium oxide.

13. The catalyst composition of claim 1 comprising a sulfate and titanium oxide.

14. The catalyst composition of claim 1 comprising a sulfate and tin oxide.

15. The catalyst composition of claim 1 wherein the fumed silica is admixed with colloidal silica.

16. The catalyst composition of claim 1 wherein the fumed silica is admixed with alumina.

17. The catalyst of claim 1 wherein the fumed silica is admixed with precipitated silica.

18. A process for the chemical conversion of a hydrocarbon comprising contacting the hydrocarbon under chemical conversion reaction conditions with a catalyst composition which includes,

- i) an oxygen compound of an element selected from Group IVB or Group IVA of the Periodic Table of the Elements;

ii) an oxygen compound of an element selected from Group VIB or Group VIA of the Periodic Table of the Elements; and

iii) at least about 1% by weight based upon total catalyst weight of fumed silica particles.

19. The process of claim 18 wherein the chemical conversion process is selected from the group consisting of isomerization, catalytic cracking, alkylation and transalkylation.

20. The process of claim 19 wherein the chemical conversion process is isomerization and the chemical conversion conditions comprise a temperature of from about 93°C to about 425°C, a pressure of from about 1 psig to about 1,000 psig, and a LHSV of from about 0.1 to about 10.

21. The process of claim 20 wherein the hydrocarbon is selected from the group consisting of n-butane, n-pentane, n-hexane, cyclohexane, n-heptane, n-octane, n-nonane and n-decane.

22. The process of claim 21 wherein the catalyst composition comprises tungsten oxide, zirconium oxide, aluminum oxide and platinum.